

REMARKS/ARGUMENTS

Reconsideration is respectfully requested of the Official Action of October 3, 2003.

A three-month extension of time, together with the associated fee, is filed herewith.

The rejection of Claims 1-8, under 35 U.S.C. § 103(a), has been rendered moot by the deletion of those claims and the replacement of those claims by new Claims 9-31, which are submitted to be patentable in view of the references relied on in the Official Action; namely, *Schaepel* (US 5,362,834) and *Brand* (US 4,377,417) for the following reasons.

The Official Action admits that *Schaepel* does not disclose the incorporation of pyrogenic metal oxides into a production product of polyisocyanate and a polyo. Neither does *Schaepel* suggest that pyrogenic metal oxides can be, or should be, substituted for the metal oxides disclosed.

Applicants present the following comments in response to the Official Action.

Schaepel teaches the incorporation of metal oxides like titanium dioxide at col. 7, lines 3-33. The use of pyrogenic metal oxides is not recited. But, applicants have determined that the use of pyrogenic oxides creates a distinct advantage in the production process and in the properties of the resulting gel.

Applicants have conducted experiments to have a direct comparison of gels produced with conventional silica compared with pyrogenic silica. The ease of production of the gel and the properties of the resulting gel produced with both types of silica were examined by applicants.

Applicants produced the gel using the following formulation:

Polyol	85 ppw
Catalyst	0.2 ppw
Silica	15 ppw

Depending on the kind of silica used, applicants obtained very important differences in the physical properties of the formulation. Using a pyrogenic silica leads to a viscosity of the mixture of about 3000 mPas. The silica produced with the standard precipitation process leads to a mixture viscosity of 35,000 mPas. This difference is crucial in every process using state of the art machinery for polyurethane raw materials. A viscosity of 3000 mPas is the upper limit in viscosity you can work with. A viscosity of 35,000 mPas is too high for standard equipment.

The polyol used for this experiment is a trifunctional glycerine started propylene oxide polyether with an ethylene oxide tip. The hydroxyl number of this product is 28. The catalyst is a typical organo metallic compound (dioctyl tin dilaurate). The aliphatic isocyanate has a viscosity of about 5,000 mPas and a NCO content of 12.5%.

This formulation was mixed with a modified hexamethylenediisocyanate using a standard lab mixer. After mixing for approximately seven seconds, the reaction mixture is poured into a heated aluminum tool with the dimensions 260 x 100 x 2 mm. After five minutes, a sticky elastomeric gel is demolded. The ratio of polyol to isocyanate was 100:12 and 100:14.

The tensile properties and the shore hardnesses of the gel sheets obtained were measured.

Silica	Ratio	Elongation (%) Iso 1798	Tensile Strength Iso 1798	Shore 000 Din 53505
Pyrogenic	100:12	800	2200	48
Precipitation	100:12	700	2200	54
Pyrogenic	100:14	420	2300	58
Precipitation	100:14	350	2500	65

The result of this series of experiments shows the desired product is only obtained using the pyrogenic silica. The desired gels are supposed to be soft with very good mechanical properties. Gels with such desired properties are required for such end uses as, e.g., liners

between a prosthesis and the stump of a limb. Applicants advise the only way to get this desired combination of properties is by using the pyrogenic formulation. The gels of the invention are significantly softer but at the same time have the same level of tensile properties, i.e., elongation and tensile strength. In addition to that, it is not possible to work with the standard silica because of an intolerable high level of viscosity.

The *Brand* patent discloses using a pyrogenic type titanium oxide pigment in order to reduce yellowing by treating the pigment with a composition which includes an organo phosphate/alkanolamine addition product. Accordingly, the teaching of *Brand* is not that the pyrogenic titanium oxide pigment prevents yellowing, but that it is necessary first to treat the pyrogenic titanium dioxide to prevent yellowing. Thus, it appears that *Brand* does not disclose that a pyrogenic metal oxide would in any way improve the formulations of *Schaepel*. Therefore, applicants respectfully submit that the basis of the rejection in the Official Action is flawed and, hence, the rejection based on the combination of references should be withdrawn and the new claims presented herewith should be allowed.

Applicants, therefore, request favorable action at the Examiner's earliest convenience.

Respectfully submitted,

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